

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) EP 1 197 967 A3

(12) EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
28.09.2005 Bulletin 2005/39

(51) Int. Cl. G11B 20/14, H03M 5/14

(43) Date of publication A2:
17.04.2002 Bulletin 2002/16

(21) Application number: 01307489.3

(22) Date of filing: 03.09.2001

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

- Lee, Kyung-geun, 122-1002 Sibeom Hanshin Seongnam-si, Gyeonggi-do (KR)
- Kim, Ki-hyun
Yongsan-gu, Seoul (KR)
- Park, Hyun-soo
Seodaemun-gu, 120-091 Seoul (KR)

(30) Priority 11.10.2000 KR 2000059840

(71) Applicant: SAMSUNG ELECTRONICS CO., LTD.
Kyungki-do (KR)

(74) Representative: Chugg, David John et al
Appleyard Lees,
15 Clare Road
Halifax,
West Yorkshire HX1 2HY (GB)

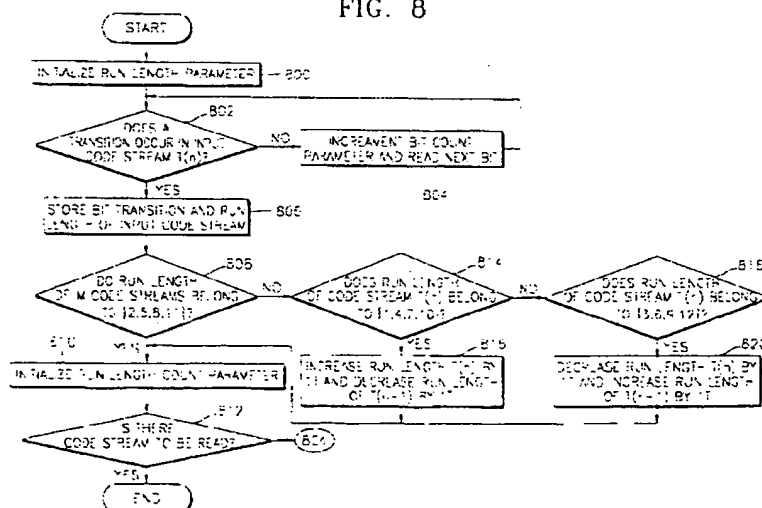
(72) Inventors:
• Shim, Jae-seong
Gwangjin-gu, Seoul (KR)

(54) Data modulation and correction methods

(57) A data modulation method resistant to channel distortion and a method for correcting error in data coded by the modulation method are provided. The data modulation method uses a run length limited (RLL) modulation code applied to write data to an optical storage medium, the RLL modulation code being expressed as RLL (d, k, m, n, s) with $s = 2$ or greater, where d is min-

imum run length, k is maximum run length, m is the data bit length before modulation, n is the codeword bit length after modulation, and s is the space length between codewords. The data modulation and correction methods can reduce a redundancy in physical address data written to an optical storage medium with improved detection performance resistant to disturbance.

FIG. 8



BEST AVAILABLE COPY

EP 1 197 967 A3

European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 30 7489

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 4 914 438 A (KAMEYAMA TADAHIKO) 3 April 1990 (1990-04-03)	1-8	G11B20/14 H03M5/14
A	* abstract * * column 3, line 8 - column 4, line 37 * * column 5, line 9 - column 9, line 18 * -----	9,14,16	
X	US 4 860 324 A (SATOMURA SEIICHIRO) 22 August 1989 (1989-08-22)	1-8	
A	* abstract * * column 1, line 7 - column 2, line 13 * * column 3, line 18 - column 4, line 25 * -----	9,14,16	
X	US 5 535 187 A (RUGAR DANIEL ET AL) 9 July 1996 (1996-07-09)	1-8	
A	* abstract * * column 1, line 9 - column 3, line 28 * * column 4, line 33 - column 5, line 37 * -----	9,14,16	
A	EP 0 880 129 A (MATSUSHITA ELECTRIC IND CO LTD) 25 November 1998 (1998-11-25) -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			G11B H03M
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 4 August 2005	Examiner Sucher, R
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons a : member of the same patent family, corresponding document	

EPO FORM 1503 (2.02.02) (Rev.01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 30 7489

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

04-08-2005

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4914438 A	03-04-1990	JP 1061122 A	08-03-1989
		JP 1072622 A	17-03-1989
		DE 3825960 A1	16-03-1989
US 4860324 A	22-08-1989	JP 1927443 C	25-04-1995
		JP 6056958 B	27-07-1994
		JP 63013425 A	20-01-1988
US 5535187 A	09-07-1996	NONE	
EP 0880129 A	25-11-1998	DE 69703790 D1	01-02-2001
		DE 69703790 T2	09-08-2001
		EP 0880129 A1	25-11-1998
		US 6208603 B1	27-03-2001
		CN 1215494 A , C	28-04-1999
		DE 69713815 D1	08-08-2002
		DE 69713815 T2	19-12-2002
		DE 69714307 D1	29-08-2002
		DE 69714307 T2	03-04-2003
		DE 69714477 D1	05-09-2002
		DE 69714477 T2	08-05-2003
		DE 69714790 D1	19-09-2002
		DE 69714790 T2	10-04-2003
		DE 69721844 D1	12-06-2003
		DE 69721844 T2	11-03-2004
		EP 1022736 A2	26-07-2000
		EP 1022737 A2	26-07-2000
		EP 1022738 A2	26-07-2000
		EP 1022739 A2	26-07-2000
		EP 1022740 A2	26-07-2000
		EP 1229523 A2	07-08-2002
		HK 1011575 A1	05-07-2002
		WO 9729483 A1	14-08-1997
		JP 3219393 B2	15-10-2001
		JP 2000057702 A	25-02-2000
		JP 3059168 B2	04-07-2000
		JP 2000057703 A	25-02-2000
		JP 3062500 B2	10-07-2000
		JP 2000057704 A	25-02-2000
		JP 3059169 B2	04-07-2000
		JP 2000057705 A	25-02-2000
		JP 3062501 B2	10-07-2000
		JP 2000057706 A	25-02-2000
		US 2003133387 A1	17-07-2003
		US 6266307 B1	24-07-2001
		US 6266309 B1	24-07-2001

EPO FORM P459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

BEST AVAILABLE COPY

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 01 30 7489

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

04-08-2005

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0880129	A	US 6269068 B1	31-07-2001
		US 2002067668 A1	06-06-2002
		US 6269069 B1	31-07-2001

EPO FORM P0450

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82